



March 6, 2001

TO POTENTIAL APPLICANTS AND OTHER INTERESTED PARTIES

INFORMATION PACKAGE

1. INTRODUCTION/INSTRUCTIONS

The goal, background, objective and scope of work for Program Solicitation No. DE-PS26-01NT41121 entitled, "Improved Recovery from Low-Permeability Formations," are being released in **draft form** to provide an opportunity for potential Applicants to review and become familiar with the requirements. Prospective Applicants are invited to comment on all aspects of the information provided herein; however, special emphasis is requested in the following areas:

- 1) Targeted technologies and their impact on low-permeability production.
- 2) Identification of information not covered that will make the Program Solicitation requirements more thorough.
- 3) Overall adequacy of priority basins and plays listed.

The DOE will consider all timely comments submitted on the information contained herein, but makes no guarantee that any comment or group of comments will result in identifiable changes to the solicitation.

Comments should be submitted to Ms. Dona Sheehan via Internet at

"dona.sheehan@netl.doe.gov," by mail, or FAX at (412) 386-6137, no later than March 20, 2001.

The DOE is under no obligation to respond to individual comments or questions, nor is it responsible for any costs associated with preparation of responses to this request or costs associated with future proposal preparation.

Applicants are cautioned that the information provided herein is not all inclusive, and is subject to change at the discretion of the DOE.

2. RELEASE OF ENTIRE SOLICITATION

The solicitation should be available by March 30, 2001; a 45-day response time is anticipated. The solicitation will be posted on the NETL Homepage for distribution purposes; applicants are encouraged to download the solicitation. Any amendments to the solicitation will also be posted on the NETL Homepage. Applicants are therefore encouraged, after issuance of the solicitation, to periodically check the NETL Homepage, to ascertain if any amendments have been issued.

3. AGREEMENT TYPE

Financial Assistance - Cost-Shared Cooperative Agreements.

4. AWARDS

Multiple awards are anticipated; the Government however reserves the right to award any number of awards deemed in its best interest.

5. **GOAL**

Improve recovery of natural gas from low-permeability formations.

6. **BACKGROUND**

As new discoveries from conventional supplies decline, future supplies of natural gas will have to come increasingly from low-permeability (tight) reservoirs. The National Petroleum Council's (NPC) 1992 natural gas study concluded that 232 Tcf of gas could be technically recoverable from low-permeability formations, and assuming that technology improvements continued, the NPC estimated that 349 Tcf of gas could be produced. In their most recent study (1999), the NPC states that deeper resources, resources in deeper water, and nonconventional resources will be the key to future supply. However, under current limitations in exploration and production technology, only a small portion of this vast resource is economic to develop.

A significant portion of natural gas resources in low-permeability formations are found in deep reservoirs and in large gross intervals (over 1000s of feet) with many potential pay zones. In addition, most low-permeability wells are marginally productive because an extensive, well-connected natural fracture network is the exception, rather than the rule. These factors indicate that improved recovery technology and reduced costs associated with completion will increase recovery from this vital resource.

Although the high ultimate recovery from wells associated with large natural fractures systems are the exception, these wells can produce 5-10 Bcf. However, these wells often have problems associated with high water production because the natural fracture system connects to overlying or underlying water zones or because they are associated with a fault(s) that provides a pathway for large water influx.

7. **PROGRAM SOLICITATION OBJECTIVE**

The objective of this program solicitation is to demonstrate existing technologies and methodologies, or improve and demonstrate technologies with strong near-term commercialization potential, for increasing production from low-permeability "tight" gas formations. Demonstrations of existing technologies should be relatively new to a basin or play.

8. **SCOPE OF WORK**

Applications will be accepted for research and development (R&D) in two major areas: (1) improved completion technology; and (2) identification/remediation of high water production problems from basin-centered gas plays. Demonstrations of existing technologies should be relatively new to a basin or play. Priority basins and plays in which the R&D shall be conducted will be identified from previous USGS, NPC and NETL studies, but will more than likely include:

Greater Green River	Wind River	Anadarko
Permian	San Juan	Piceance
Uinta	Arkla-E.Texas	

Increasing reserves per well with better completion technology or reducing the cost to complete a well will vastly improve the recovery from marginally economic wells. Applications for improved completions can include (but will not be limited to):

- Cementing
- Downhole separation/reinjection
- Stimulation techniques
 - compatible fluids

- composite fracturing plugs/baffles
- zonal isolation
- Improved identification of most productive intervals
- Tubulars (CO₂/H₂S)
- Multi-lateral horizontal wells
- Multiple stimulations from a horizontal well

By identifying the sources and mechanisms of high water production, industry can avoid these areas or complete the reservoir in a way that reduces or eliminates excessive water production. Applications for identification of high water production problems from basin-centered gas plays can include:

- Regional hydrologic study
- Water sampling and analysis
- New/improved geophysical well log processing
- Improved downhole fluid identification

Deliverables (Minimum Requirement)

- Final Report
- Site Selection and Well Completion Plan (if applicable)
- Best Practice Manual (if applicable)

Briefings (Minimum Requirement)

Briefings will be held at DOE-NETL (either Morgantown or Pittsburgh) unless otherwise specified.

- Project kick-off meeting.
- Technology transfer (workshops, industry meetings)
- Final project review/results.

9. COST PARTICIPATION

A minimum of 20 percent cost share is expected from the applicant and/or their industry partner(s) for any project proposed. For those technologies that are existing or near commercialization, a cost share of 50 percent or more is expected since the risk associated with a demonstration is reduced. DOE's cost share will only be for the R&D portion of the project. For example, if a stimulation technique is proposed, DOE will not fund the drilling or tubular cost of the well, but would cost share the stimulation cost.

10. AWARD VALUE

DOE expects project awards (depending on complexity) in the range of \$300,000 to \$600,000.